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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DINH, TUAN T

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 10/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/779,117

Applicant(s)

DISTEFANO ET AL.

Examiner

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 July 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Applicant's election without traverse of Group I (claims 1-28) in Paper No. 4 is acknowledged.

Claims 29-40 are canceled without prejudice.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 18 recites the limitation "said first surface" in line 3. There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-28 are rejected under 35 U.S.C. 102(e) as being anticipated by DiStefano et al. (U. S. Patent 5,590,460).

As to claim 1, DiStefano discloses an interposer (95) as shown in figures 1-25 comprising:

a body (30, column 9, line 59) having a first major surface (32, column 9, line 60), said body (30) having horizontal directions parallel to said first major surface, and vertical directions perpendicular to said first major surface;

a plurality of conductors (78) in said body (30), and

a plurality of contacts (80-figure 5) on or above said first major surface (32), each said contact being permanently joined to one said conductor and extending radially outwardly from the conductor, each said contact having a periphery (84-figure 5) remote from the conductor and a central portion attached to the conductor;

each said contact (80) being adapted to deform (see figure 8-9) so that the periphery of the contact will contract radially inwardly toward the central portion (figure 9 of the contact in response to urging said periphery (84) of the contact against a contact pad (100, column 13, line 50) and inserting the central portion of the contact into the hole (60) defined by the contact pad (100),

whereby said contacts (80) will wipe the contact pads (100) of a microelectronic element (98, column 13, line 45) when the microelectronic element is juxtaposed with said first surface and forced toward said body (see figures 7-9).

As to claim 2, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein each said contact (80) bends vertically downwardly so that the periphery of the

contact moves towards the body, as well as contracting radially inwardly toward the central portion of the contact.

As to claim 3, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein the periphery (84) of each said contact (80) is spaced vertically above said body, with a gap between the periphery of said contact and said body (455-figures 20-25, column 19, lines 38-53, column 20, line 1).

As to claim 4, DiStefano discloses an interposer (95) as shown in figures 8-9 wherein said body (30) is deformable at least near the periphery (84) of each said contact (80), whereby said movement of said periphery toward said body causes said periphery to engage and deform said body.

As to claim 5, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein said body further comprises an adhesive layer (94, 96-figure 6) on said first major surface for adhering said interposer to said microelectronic element.

As to claim 6, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein said contacts (80) are disposed on said adhesive layer (94, 96, column 13, line 27).

As to claim 7, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein said adhesive layer (94; 96) has a thickness beneath said contacts greater than a thickness of said adhesive layer between said contacts (see figures 6 and 9).

As to claim 8, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein the periphery of each said contact is noncircular (see figures 15-17).

As to claim 9, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein each said contact includes a plurality of tabs (242-figure 15, 354-figure 17) extending radially outwardly away from the conductor, each said tab having a tip remote from the conductor.

As to claim 10, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein said tabs (254) of each said contact are disposed in a substantially symmetrical pattern about the juncture of the contact and the associated conductor,

As to claim 11, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein each said contact includes four said tabs (242-figure 15, and 254-figure 17), and said substantially symmetrical pattern is a quatrefoil pattern.

As to claim 12, DiStefano discloses an interposer (95) as shown in figure 15 wherein said contacts (250) are disposed in a substantially rectilinear grid having rows and columns, and wherein said tabs (254) extend substantially diagonally with respect to said rows and columns.

As to claim 13, DiStefano discloses an interposer (95) as shown in figures 15-17 wherein said tabs (254) are disposed in a star pattern with tips of said tabs having a circumferential width less than a circumferential width of said tabs near said central portion.

As to claim 14, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein a circumferential width of said tabs near said tips (256, column 17, line 23) is greater than a circumferential width of said tabs near said central portion.

As to claims 15-16, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein each said contact includes a conductive bonding material (246, column 17, lines 1-9, column 18, line 46, claim 16) adapted to facilitate electrical joining of said tabs to contact pads engaged therewith.

As to claims 17-18, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein each said contact is formed integrally with the associated conductor (column 17, lines 44-46).

As to claim 19, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein said conductors are arranged at a pitch of less than about 1.0 mm, from center to center (column 17, lines 23-27).

As to claim 20, DiStefano discloses an interposer (95) as shown in figures 1-25 wherein said body (30) defines a second major surface (34) facing in an opposite direction from said first major surface (32), at least some of said conductors (78) being through conductors having first ends disposed adjacent said first major surface and second ends disposed adjacent said second major surface, at least some of said contacts being permanently joined to said first ends of said through conductors (see figures 1-9), the interposer (95) further including second end contacts (82) on or above said second major surface permanently joined to said second ends of said through conductors; each said second-end contact extending radially outwardly from the associated conductor, each said second-end contact having a periphery remote from the conductor, each said second-end contact being adapted to deform so that the periphery of the contact will contract radially inwardly toward the central portion of the

contact in response to urging said periphery of the contact against a contact pad of a second microelectronic element and inserting the central portion of the contact into a hole defined by the contact pad; whereby said contacts will wipe the contact pads of the second microelectronic element when the second microelectronic element is juxtaposed with said second surface and forced toward said body.

As to claim 21, DiStefano discloses an interposer (95-figures 1-25) for making connections to pads (100) on the surface of a microelectronic element (98), said pads defining holes (60) therein, comprising:

- an interposer body (30) having a first surface (32); and

- a plurality of contacts (80; 82) on said body, each said contact comprising a central portion extending through said first surface into said body (see figures 5, 17), and a peripheral portion (84) extending radially from said central portion on or above said first surface, said peripheral portion (84) of each said contact (80) being adapted to bend downward, toward said body, and said central portion adapted to remain substantially undeformed, in response to a force on said peripheral portion directed downwardly toward said body.

As to claim 22, DiStefano discloses the interposer as shown in figures 5 and 17 wherein said central portion is substantially cylindrical.

As to claim 23, DiStefano discloses the interposer as shown in figures 5 and 17 wherein said peripheral portion comprises a plurality of tabs (354) extending radially from said central portion.



As to claims 24-25, DiStefano discloses the interposer as shown in figures 1-25 further comprising a deformable layer (94-figure 6), which is an adhesive layer between said first surface and said peripheral portions of said contacts.

As to claim 22, DiStefano discloses the interposer as shown in figures 1-25 wherein said peripheral portion and said first surface define a gap therebetween (455, column 19, lines 38-53, column 20, line 1).

As to claim 27, Distefano discloses an interposer as shown in figures 1-25 comprising:

an interposer body (30) having a first surface (32), and

a plurality of contacts (80, 250) on said body, each said contact including a central portion and a plurality of tabs (254) extending radially outwardly from the central portion, all of said tabs extending over said first surface, each said tab being adapted to deform radially inwardly, toward the central portion, in response to a force on such tab directed downwardly toward said body.

As to claim 28, DiStefano discloses the interposer as shown in figures 1-25 wherein the tabs (354) of said contacts (250) have top surfaces facing upwardly away from said body and asperities on such top surfaces, whereby said asperities will engage and wipe a contact pad engaged with the contact.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-1341 for regular communications and 703-305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TD  
October 9, 2002

  
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